SNI

Standar Nasional Indonesia

SNI 07-0954-2005

Steel bars for concrete reinforcement in the form of coils

ICS 77.140.20

National Standardization Body

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Foreword

Standar Nasional Indonesia, Steel bars for concrete reinforcement in the form of coils is a revision of SNI 07-0954-1989 *Baja tulangan beton dalam bentuk gulungan*, and was revised based on the following considerations:

1. The standard has been in use for a considerable period of time, namely over 5 years and therefore a revision is considered necessary taking into consideration the consumers needs, capabilities of manufacturers and technology development.
2. In this SNI revision, standards of other countries known internationally where referred to, including JIS G 3112-1991, *Steel bars for concrete reinforcement.*

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This standard was developed and prepared by Technical Committee 5 S Iron, Steel and Steel Products, and form the result of a consensus meeting held in Jakarta September 16th, 2003, which was attended by stake holders such as universities, government, test institutes, consumers and manufactures.

Steel bars for concrete reinforcement in the form of coils

1 Scope

This standard cover, normative references, terms and definitions, quality requirements, sampling, testing, acceptance requirements, packaging and marking, of steel bars for concrete reinforcement in the form of coils.

2 Normative references

SNI 07-0371-1998, *Batang uji tarik untuk bahan logam*

SNI 07-0408-1989, *Cara uji tarik untuk logam.*

SNI 07-0410-1989, *Cara uji lengkung tekan*

3 Terms and definitions

3.1

steel bars for concrete reinforcement in the form of coils

steel in the form of round bars for concrete reinforcement with smooth surfaces packed in the form of coils and used to reinforce concrete and produced from billets by hot rolling

3.2

nominal size

sizes determined in this standard

3.3

tolerance

permissible variation from nominal size

4 Quality requirements

4.1 Appearance

Steel bars for concrete reinforcement in the form of coils shall be free from flashes, folds, cracks, surface irregularities and may only show slight corrosion on its surface

4.2 Size and tolerance

4.2.1 Diameter and weight

Diameter and weight per meter of plain steel bars for concrete reinforcement in the form of coils (Bj TPG) is shown in Table 1

Tabel 1 Size of plain steel bars for concrete reinforcement

No.	Designation	Nominal diameter (d) (mm)	Nominal cross section (L) (cm^2)	Nominal weight (kg/m)
1.	P. 6	6	0,2827	0,222
2.	P. 8	8	0,5027	0,395
3.	P.10	10	0,7854	0,617
4.	P.12	12	1,131	0,888
5.	P.14	14	1,539	1,21
6.	P.16	16	2,011	1,58

4.2.2 Diameter tolerance

Diameter tolerance of steel bars for concrete reinforcement in the form of coils shall conform to Table 2.

Tabel 2 Diameter tolerance of plain and ribbed steel bars for concrete reinforcement

No.	Diameter (d) (mm)	Tolerance (mm)	Permissible variation in roundness (%)
1	6	± 0,3	Maximum 70 from the tolerance limit
2	$8 \leq d \leq 14$	± 0,4	
3	$16 \leq d \leq 25$	± 0,5	
NOTE Variation in roundness is the difference between the maximum and minimum diameter obtained from measurement results taken on the same cross section of the steel bar for concrete reinforcement			

4.2.3 Weight tolerance

The weight tolerance of a coil of steel bars for concrete reinforcement in the form of coils is determined and shown in Table 3 and Table 4

Tabel 3 Weight tolerance per meter

No.	Diameter (d) (mm)	Tolerance (%)
1	$6 \leq d \leq 8$	± 7
2	$10 \leq d \leq 14$	± 6
3	d = 16	± 5

Tabel 4 Weight tolerance per coil

No.	Diameter (d) (mm)	Tolerance (%)
1	$6 \leq d \leq 8$	±6
2	$10 \leq d \leq 14$	±5
3	d = 16	± 4

4.2.4 Mechanical properties

Mechanical properties of steel bars for concrete reinforcement in the form of coils is determined and shown in Table 5

Tabel 5 Mechanical properties

Steel bars for concrete reinforment class	Tensile test			Bend test	
	Yield strength kgf/mm² (N/mm²)	Tensile strength kgf/mm² (N/mm²)	Elongation min. (%)	Bend angle	Mandrel pin diameter
BjTP 24	minimum 24 (235)	minimum 39 (380)	20	180°	3 x d
BjTP 30	minimum 30 (295)	minimum 45 (440)	18	180°	3 x d
NOTE Bend test result shall show no cracks at the outside surface of the bend portion 1 kg f/mm^2 = 9,81 N/mm^2.					

5 Sampling

5.1 Sampling is carried out by authorized personnel

5.2 The person in charge of taking samples shall be given free access by the manufacturer or trader to perform his duties

5.3 Sampling is carried out at random

5.4 Number of samples

a) From each batch consisting of the same heat number and size one sample shall be taken

b) From each batch consisting of the same heat number and size and from the same steel class, 1 (one) sample shall be taken from every 25 (twenty five) ton with a maximum of 5 (five) samples

c) Samples for mechanical testing is taken according to need, with a maximum length of 1, 50 m, cut from one end of the steel bar for concrete reinforcement and shall not be cut by flame cutting

6 Test method

6.1 Appearance test

The appearance test is carried out visually without the aid of instruments, to identify the existence of any defects according to 4.1

6.2 Measurement of size, weight and shape

6.2.1 Plain coiled steel bars for concrete reinforcement (Bj TPG)

6.2.1.1 Plain coiled steel bars for concrete reinforcement are measured at one location to determine its minimum and maximum diameter

6.2.1.2 The measurement is taken at 3 (three) different locations for 1 (one) sample and the average value is calculated for the results.

6.2.1.3 The weight is determined by weighing (net weight) and recorded against the length of the sample.

6.3 Mechanical testing

6.3.1 The tensile and bending test specimen shall be straight and the rolled skin shall not be removed

6.3.2 Number of test specimens

For each sample, 1 (one) tensile and bending test shall be carried out

6.3.3 Testing

6.3.3.1 Tensile test

Tensile testing is carried out according to SNI 07-0408-1989, Cara *uji tarik untuk logam,* with a sample shape conforming to SNI 07-0371-1998, *Batang uji tarik untuk bahan logam) batang uji tarik no. 2).* To calculate the elongation and tensile strength of the plain steel bars for concrete reinforcement the cross sectional area is calculated based on the nominal diameter of the sample

6.3.3.2 Bending test

Bend test is carried out according to SNI 07-0410-1989, *Cara uji lengkung tekan.*

7 Acceptance requirements

7.1 A batch is accepted when conforming to quality requirements stated in 5

7.2 Failure of any test specimen to comply with the requirements shall constitute grounds for a retest using 2 (twice) the number of initial specimens used, taken from the same batch

7.3 Whenever the second test shown that all the requirements are fulfilled, the batch is accepted. The batch is rejected whenever after the retest any of the requirements are not fulfilled.

8 Packaging

8.1 The mass of each coil of steel bars for concrete reinforcement is determined by agreement between the manufacturer and consumer

8.2 One coil shall be made up of the same heat number, tied in one bundle, if one bundle consists of more than one coil, every coil shall be tightly and properly tied up, and each end of a coil shall be marked with paint and the coils shall have the same direction and shall not interfere with each other.

8.3 Mass of the tying material shall not exceed 0,2% of the mass of a bundle

9 Marking

Each coil shall be labelled denoting the following:

a) Name or abreviation of the name of the manufacturer
b) Size (diameter and length)
c) Steel class
d) Heat number
e) Serial number and date of production

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